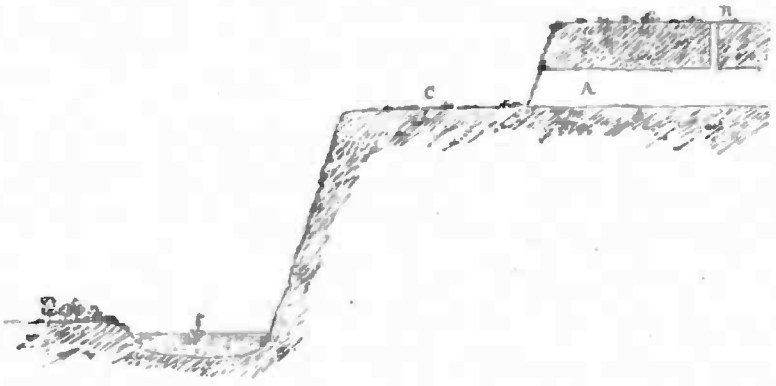
of water. Here the ceiling bed was 50 feet from the surface of the ground. Much money had been spent upon it, and the owner considered that he should be able ultimately to clear the water by means of the engine, and win the stone.

We have described these two quarries as being entered by means of a shaft, and there are many others in the same position. The majority, however, of the Allemagne quarries are in the hill-side, overhanging the river Orne, and need no shaft. The river runs at the foot of a steep escarpment, which rises 60 or 80 feet above it. At this level there is a wide roadway, and then beyond this the hill again rises: and it is in the face of this second escarpment that the quarries are opened. The annexed slight sectional diagram will make their position more evident.



A is the entrance to the quarry; B an occasional shaft for ventilation (there are but very few of these); and C the roadway. On the other side of the river a flat country extends as far as the eye can reach.*

The quarries are worked to a great extent, and from west to east, the joints facing the cardinal points: some of them extend more than a quarter of a mile under-ground. A few of them communicate by lateral passages one with another, and would shelter an army. The glimmer of the quarrymen's lights seen at the end of a gallery, and the sound of their chissels, a scarcely heard "pick, pick," increase the peculiar effect of the scene.

The men remove the stone by cutting a space 6 inches wide between the beds horizontally, and about 4 feet in extent, by means of an iron bar 1 inch in diameter, chissel-pointed, which varies in length according to the period of the operation, but is sometimes as much as 9 feet. Upright joints are cut in the same manner, and the block is then easily removable.†

Let us now note the beds as they are found in the majority of the quarries. Mr. Donaldson gives the names in his paper which we printed some time ago, but it is necessary we should repeat them. The ceiling bed (about 2 feet 6 inches thick) is called the *banc cloutier*. It is cohesive and sound, as we have already seen, but containing pebbles (semi-flints), cannot profitably be worked, and is never taken out.

The workable beds, six in number, are named as follows:—

The *Banc pourri*.—This is under the ceiling bed, and is about 3 feet thick. It is considered a good stone, well indurated, but as it occasionally contains pebbles like those in the *banc cloutier*, although not to the same extent, is not so fit for fine work as the lower beds.

The *Gros banc* lies next, and could be got out 5 feet thick; but as this is too large a size for convenience, it is usually taken out in two thicknesses, 3 feet and 2 feet, and the smaller of the two is called the *banqueret* of the *gros banc*.

The *Pierre franche*, which follows, is about 3 feet deep, and appears to be considered the *best* and most durable bed. Then come

The *Banc de quatre pieds*, which has usually the thickness from which it takes its name, 4 feet; and

The *Pierre de treate pouces*, which, in like manner, is always 30 inches thick. Both of these are good beds, and are the lowest which ought to be used for external work. The last bed which is quarried is termed

The *Banc franc*; and this being like the *gros banc*, nearly 5 feet thick, is split into two thicknesses, 3 feet and 2 feet, of which the upper (2 feet thick) is called the *banqueret* of the *banc franc*.

There seems to be no difference of opinion, amidst the greatest differences in other respects, as to the unfitness of the whole of the *banc franc* for external work. Unfortunately, however, it is from this bed that the largest and most shapely stones can be obtained with the least difficulty; it is the stone from this bed which is least venty, and which cuts with the greatest ease and the least waste, so that many builders, perhaps not fully aware of its unstable nature, prefer to take it rather than the harder and more durable stone. Up to a very recent period the stone from this bed has been sent into the market, by all parties, with that of the other beds, to be used indiscriminately, a fact which is thought to account for the decay which is now observable in various quarters. Caen stone does not differ in this respect from the oolites in our own country: the bottom beds of the Bath quarries and Portland quarries, for example, are softer and much less durable than the top beds.

Of late, one of the Caen houses (Messrs. Lüard and Beedham), becoming satisfied that the bottom bed is not fit for outside work, profess to mark with a cross every block which comes from it, so that these may be used in parts not exposed to the effects of weather, and we are disposed, after inquiry, to believe their profession. They further number each block on the upright side of it as it stands in the quarry, so as to show with certainty the way of its bed. If builders, to save labour or through carelessness, will, nevertheless, use the "bad" bed externally, the culpability of course rests with them, and the reputation of the stone is risked in spite of any precaution which may be taken to prevent it.

We did not find that the other merchants profess to distinguish the blocks of the bottom bed from those of the upper. One of the principal of them, who, although he would not admit that the *franc banc* gave the worst stone, still called it in conversation the "bad" bed, said, "If I distinguish this, I shall have to keep it back, and what can I do with it? When dry, the stone looks all alike, and I defy any person then to tell one bed from another." This is true enough; but which bed will *last* the longer, and what is the wise course for those to adopt who are really interested in maintaining a good reputation for the stone, are quite another question.

To distinguish bad stone from the good, when both are dry, appears, indeed, to be almost impossible; but it is not so when fresh from the quarries, or even after rain, when the stone is in its place. It is considered by those who have had the most experience of the stone that blocks which are party-coloured (part dark, part light) are, as is the case with Portland stone, less trustworthy than those which are of an even colour,—more equally indurated. The soft parts of the stone remain dark, perhaps because they absorb water more readily than the harder portions; or it may be that the constituents are different: this, however, we shall speedily prepare to decide by experiment. It is proper to remark that absorbing water is not necessarily the *cause* of the decay (some very absorbent stones are known to be very durable), but is an evidence of the want of solidity and compact agglutination. When quite dry the bad stone would probably be found to have a less specific gravity than the good,—a question which, with many others, we shall endeavour presently to determine. But here we must leave the subject till next week.

George Godwin.

* The appearance of Caen and intervening country, seen from [illegible], is very beautiful.

† The men begin work at half-past five in the morning. They [illegible] hour allowed them for breakfast, two hours for dinner [illegible] which they usually pass in sleep at the quarry, [illegible] and half-an-hour in the afternoon. They leave off work at eight in the evening. When working by the piece, [illegible] is usually the case, some men can earn [illegible] a day; many, however, do not earn 2s. a

SOME OF THE GREAT NAMES IN ART.

DA VINCI—MICHELANGELO—RAFFAELLE.

With reference to a recent discussion in the pages of The Builder on the value of ancient art, it may not be amiss to glance at some of the great men of the revival. Let us first for a moment consider the wonderful powers of mind of the venerable Da Vinci, who was not only the greatest painter, but the most profound and original thinker, the greatest mathematician and most ingenious mechanic of his time; architect, poet, chemist, musician,—it is marvellous to contemplate all that he excelled in; nor are we only astounded by the variety of his natural gifts and acquired knowledge, but by the practical direction of his amazing powers; for, though it was said of him by Fuseli, "that he was fitter to scatter hints than to teach by example," yet it must be acknowledged that his hints were germs of great truths; he was the first to break up the fallow ground of science and philosophy, that was afterwards cultivated by Galileo, Kepler, and other illustrious names; although his fame now rests on the works he has left as a painter.

And then the sublime genius of Michelangelo, whose very name seems to awaken sensations of awe, and whose works have been universally regarded as the most solemn and impressive that human hand ever produced,—whether we consider him as a painter, illustrating the destinies of man in the sublime circle of the Sistine Chapel—as a sculptor, uniting the greatest magnificence of design with the utmost simplicity and breadth—or as the architect, whose vast and daring genius undertook to lift the cupola of St. Peter's, and as he himself said, "to hang it in the clouds."

And lastly, and certainly the greatest name

For a comprehensive guide on OCR and PDF Compression visit our website